

4. Microservices using the Messaging queue

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Github: https://github.com/khristinakokolus/microservices_architecture.git

All code is in the *micro_mq* branch.

Sending 10 POST requests with 10 messages.

Facade service console:

```
2022-05-25 22:49:18 INFO      Client started
2022-05-25 22:49:18 INFO      * Running on http://127.0.0.1:8080/ (Press CTRL+C to quit)
2022-05-25 23:07:18 INFO      127.0.0.1 - - [25/May/2022 23:07:18] "POST /facade_service HTTP/1.1" 200 -
2022-05-25 23:07:19 INFO      127.0.0.1 - - [25/May/2022 23:07:19] "POST /facade_service HTTP/1.1" 200 -
2022-05-25 23:07:21 INFO      127.0.0.1 - - [25/May/2022 23:07:21] "POST /facade_service HTTP/1.1" 200 -
2022-05-25 23:07:22 INFO      127.0.0.1 - - [25/May/2022 23:07:22] "POST /facade_service HTTP/1.1" 200 -
2022-05-25 23:07:23 INFO      127.0.0.1 - - [25/May/2022 23:07:23] "POST /facade_service HTTP/1.1" 200 -
2022-05-25 23:07:25 INFO      127.0.0.1 - - [25/May/2022 23:07:25] "POST /facade_service HTTP/1.1" 200 -
2022-05-25 23:07:26 INFO      127.0.0.1 - - [25/May/2022 23:07:26] "POST /facade_service HTTP/1.1" 200 -
2022-05-25 23:07:29 INFO      127.0.0.1 - - [25/May/2022 23:07:29] "POST /facade_service HTTP/1.1" 200 -
2022-05-25 23:07:30 INFO      127.0.0.1 - - [25/May/2022 23:07:30] "POST /facade_service HTTP/1.1" 200 -
2022-05-25 23:07:31 INFO      127.0.0.1 - - [25/May/2022 23:07:31] "POST /facade_service HTTP/1.1" 200 -
```

Launched 3 logging services.

First logging service console:

```
* Debug mode: off
2022-05-25 22:49:20 INFO      * Running on http://127.0.0.1:8083/ (Press CTRL+C to quit)
2022-05-25 23:07:19 INFO      {'message': 'msg2', 'message_uuid': '6c09c0ed-0438-4b16-8bac-3924a6dcb1ff'}
2022-05-25 23:07:19 INFO      127.0.0.1 - - [25/May/2022 23:07:19] "POST /logging_service HTTP/1.1" 200 -
2022-05-25 23:07:30 INFO      {'message': 'msg9', 'message_uuid': 'f450043a-560c-4ea3-a0ef-d514da4975bf'}
2022-05-25 23:07:30 INFO      127.0.0.1 - - [25/May/2022 23:07:30] "POST /logging_service HTTP/1.1" 200 -
2022-05-25 23:07:31 INFO      {'message': 'msg10', 'message_uuid': '4f969197-bd5a-4b5f-afb6-befa08c206c1'}
2022-05-25 23:07:31 INFO      127.0.0.1 - - [25/May/2022 23:07:31] "POST /logging_service HTTP/1.1" 200 -
```

Second logging service console:

```
* Debug mode: off
2022-05-25 22:49:22 INFO      * Running on http://127.0.0.1:8084/ (Press CTRL+C to quit)
2022-05-25 23:07:17 INFO      {'message': 'msg1', 'message_uuid': 'cc141a22-c951-40fb-ba69-61945390ab82'}
2022-05-25 23:07:18 INFO      127.0.0.1 - - [25/May/2022 23:07:18] "POST /logging_service HTTP/1.1" 200 -
2022-05-25 23:07:23 INFO      {'message': 'msg5', 'message_uuid': 'f05cc377-f1f2-447b-a3e6-6feb1e8f43fe'}
2022-05-25 23:07:23 INFO      127.0.0.1 - - [25/May/2022 23:07:23] "POST /logging_service HTTP/1.1" 200 -
2022-05-25 23:07:26 INFO      {'message': 'msg7', 'message_uuid': 'ad6a1df1-6c9f-4e4b-8991-967b5e41a16c'}
2022-05-25 23:07:26 INFO      127.0.0.1 - - [25/May/2022 23:07:26] "POST /logging_service HTTP/1.1" 200 -
2022-05-25 23:07:29 INFO      {'message': 'msg8', 'message_uuid': 'e6f90b47-9df8-4930-b2f4-d44e1014e3db'}
2022-05-25 23:07:29 INFO      127.0.0.1 - - [25/May/2022 23:07:29] "POST /logging_service HTTP/1.1" 200 -
```

Third logging service console:

```
use a production web server instead.
* Debug mode: off
2022-05-25 22:49:23 INFO      * Running on http://127.0.0.1:8085/ (Press CTRL+C to quit)
2022-05-25 23:07:21 INFO      {'message': 'msg3', 'message_uuid': '3474b574-f154-4f2f-8cbf-4ae707f255d7'}
2022-05-25 23:07:21 INFO      127.0.0.1 - - [25/May/2022 23:07:21] "POST /logging_service HTTP/1.1" 200 -
2022-05-25 23:07:22 INFO      {'message': 'msg4', 'message_uuid': 'cceeac61-c7d0-4ff2-8320-64852854f46f'}
2022-05-25 23:07:22 INFO      127.0.0.1 - - [25/May/2022 23:07:22] "POST /logging_service HTTP/1.1" 200 -
2022-05-25 23:07:25 INFO      {'message': 'msg6', 'message_uuid': '1e27c85a-8364-46a9-94dc-6730d9ade705'}
2022-05-25 23:07:25 INFO      127.0.0.1 - - [25/May/2022 23:07:25] "POST /logging_service HTTP/1.1" 200 -
```

From here it can be seen that messages are randomly distributed among the logging service instances.

Launched 2 messages services.

First messages service console:

```
2022-05-25 22:49:25 INFO      Client started
2022-05-25 22:49:25 INFO      * Running on http://127.0.0.1:8081/ (Press CTRL+C to quit)
2022-05-25 23:07:18 INFO      {'message': 'msg1', 'message_uuid': 'cc141a22-c951-40fb-ba69-61945390ab82'}
2022-05-25 23:07:21 INFO      {'message': 'msg3', 'message_uuid': '3474b574-f154-4f2f-8cbf-4ae707f255d7'}
2022-05-25 23:07:23 INFO      {'message': 'msg5', 'message_uuid': 'f05cc377-f1f2-447b-a3e6-6feb1e8f43fe'}
2022-05-25 23:07:26 INFO      {'message': 'msg7', 'message_uuid': 'ad6a1df1-6c9f-4e4b-8991-967b5e41a16c'}
2022-05-25 23:07:30 INFO      {'message': 'msg9', 'message_uuid': 'f450043a-560c-4ea3-a0ef-d514da4975bf'}
```

Second messages service console:

```
2022-05-25 22:49:27 INFO      Client started
2022-05-25 22:49:27 INFO      * Running on http://127.0.0.1:8082/ (Press CTRL+C to quit)
2022-05-25 23:07:19 INFO      {'message': 'msg2', 'message_uuid': '6c09c0ed-0438-4b16-8bac-3924a6dcb1ff'}
2022-05-25 23:07:22 INFO      {'message': 'msg4', 'message_uuid': 'cceeac61-c7d0-4ff2-8320-64852854f46f'}
2022-05-25 23:07:25 INFO      {'message': 'msg6', 'message_uuid': '1e27c85a-8364-46a9-94dc-6730d9ade705'}
2022-05-25 23:07:29 INFO      {'message': 'msg8', 'message_uuid': 'e6f90b47-9df8-4930-b2f4-d44e1014e3db'}
2022-05-25 23:07:31 INFO      {'message': 'msg10', 'message_uuid': '4f969197-bd5a-4b5f-afb6-befa08c206c1'}
```

From here it can be seen that messages are randomly gotten from the Message queue to the messages service instances.

GET request output with messages from messages service on 8081 port:

```
HTTP/1.0 200 OK
Content-Type: text/html; charset=utf-8
Content-Length: 146
Server: Werkzeug/2.0.2 Python/3.9.7
Date: Wed, 25 May 2022 20:11:07 GMT

Logging service messages: [msg1, msg9, msg3, msg8, msg10, msg7, msg5, msg6, msg4, msg2]
Messages service messages: [msg1, msg3, msg5, msg7, msg9]

Response file saved.
> 2022-05-25T231108.200.html

Response code: 200 (OK); Time: 1315ms; Content length: 146 bytes
```

GET request output with messages from messages service on 8082 port:

```
HTTP/1.0 200 OK
Content-Type: text/html; charset=utf-8
Content-Length: 147
Server: Werkzeug/2.0.2 Python/3.9.7
Date: Wed, 25 May 2022 20:11:40 GMT

Logging service messages: [msg1, msg9, msg3, msg8, msg10, msg7, msg5, msg6, msg4, msg2]
Messages service messages: [msg2, msg4, msg6, msg8, msg10]

Response file saved.
> 2022-05-25T231141.200.html

Response code: 200 (OK); Time: 1229ms; Content length: 147 bytes
```

Facade service console on GET request:

```
2022-05-25 23:11:07 INFO      Logging service on: http://localhost:8083/logging\_service
2022-05-25 23:11:07 INFO      Message service on: http://localhost:8081/message\_service
2022-05-25 23:11:07 INFO      127.0.0.1 - - [25/May/2022 23:11:07] "GET /facade_service HTTP/1.1" 200 -

2022-05-25 23:11:40 INFO      Logging service on: http://localhost:8085/logging\_service
2022-05-25 23:11:40 INFO      Message service on: http://localhost:8082/message\_service
2022-05-25 23:11:40 INFO      127.0.0.1 - - [25/May/2022 23:11:40] "GET /facade_service HTTP/1.1" 200 -
```

Logging service console on GET request:

```
2022-05-25 23:11:27 INFO      127.0.0.1 - - [25/May/2022 23:11:27] "GET /logging_service HTTP/1.1" 200 -
```

Messages service console on GET request:

```
2022-05-25 23:11:07 INFO      127.0.0.1 - - [25/May/2022 23:11:07] "GET /message_service HTTP/1.1" 200 -
```

